

Receptor Assay (1)

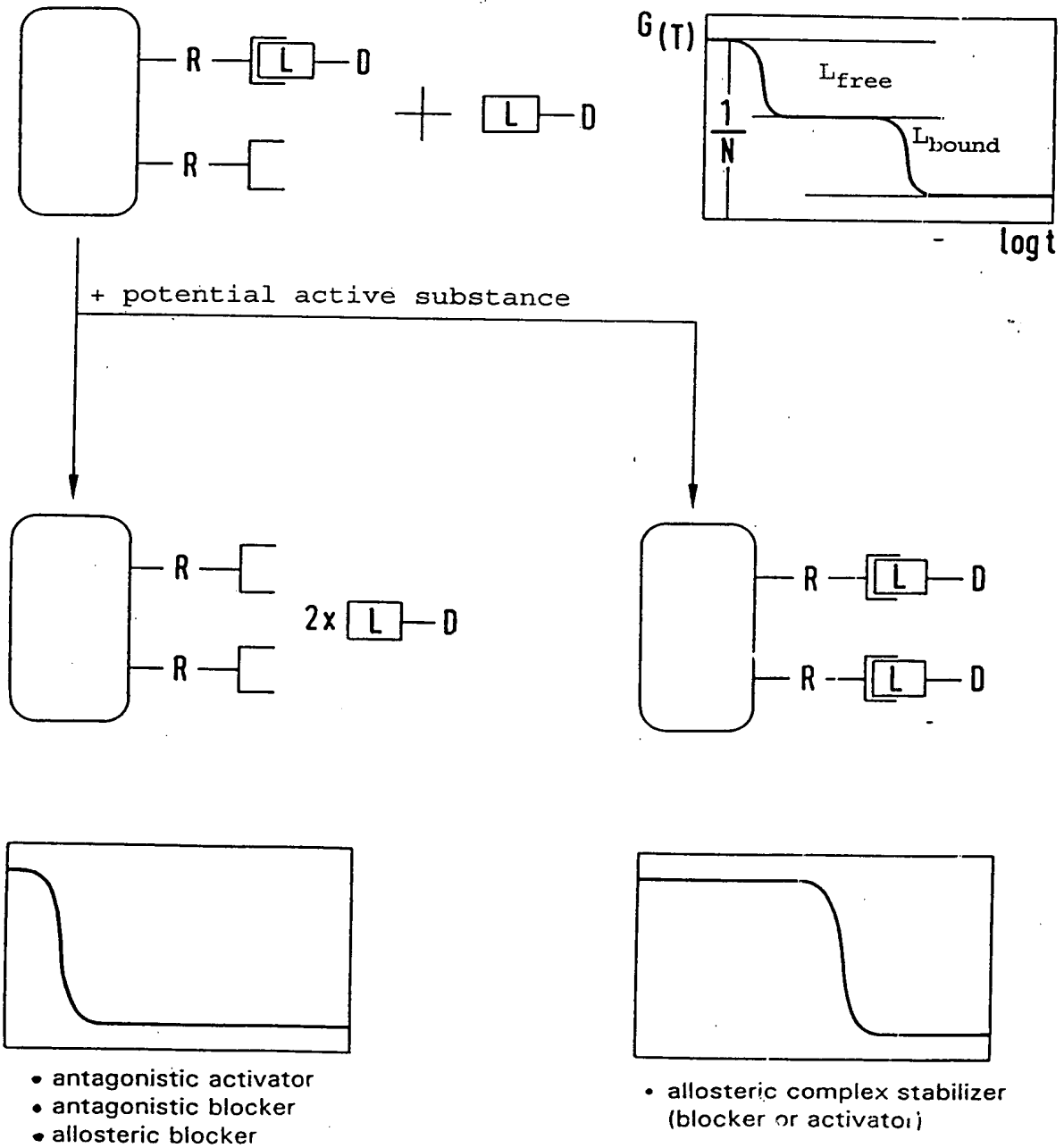
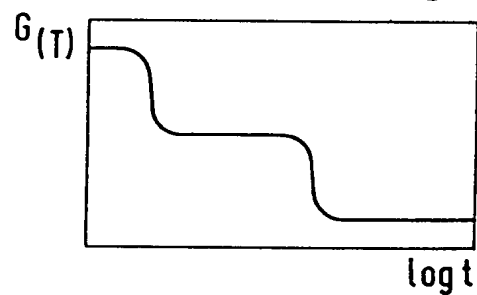
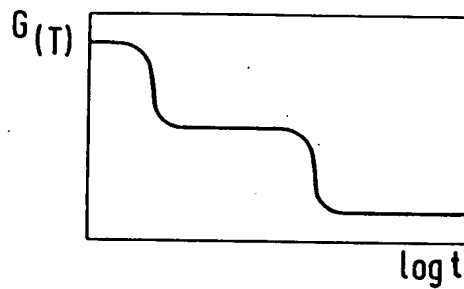
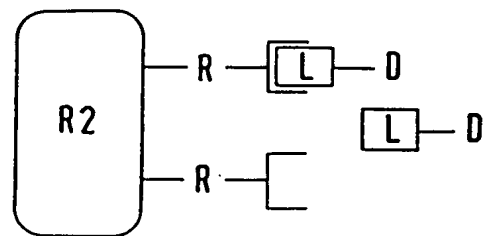
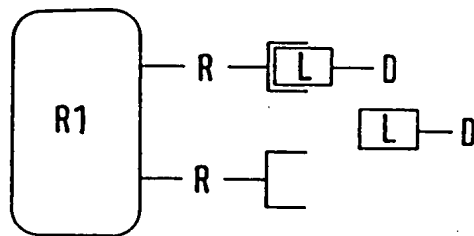


FIG.1

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Receptor Assay (2)



+ potential active substance

separation of
receptor functions

interference acting
in the same direction

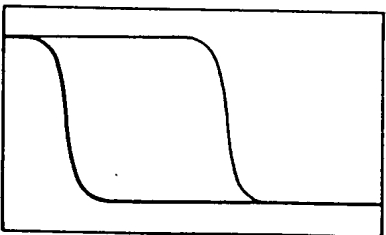
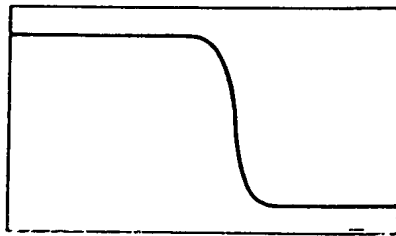
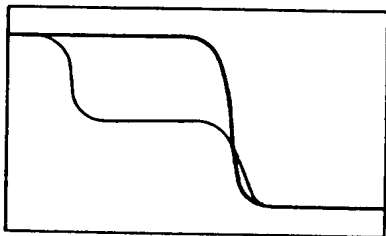
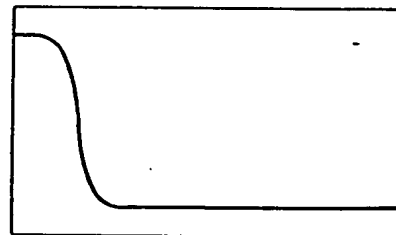
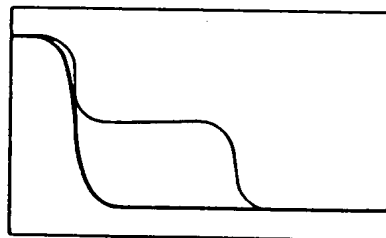


FIG.2

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FCS Analysis with Multi Well Sheets

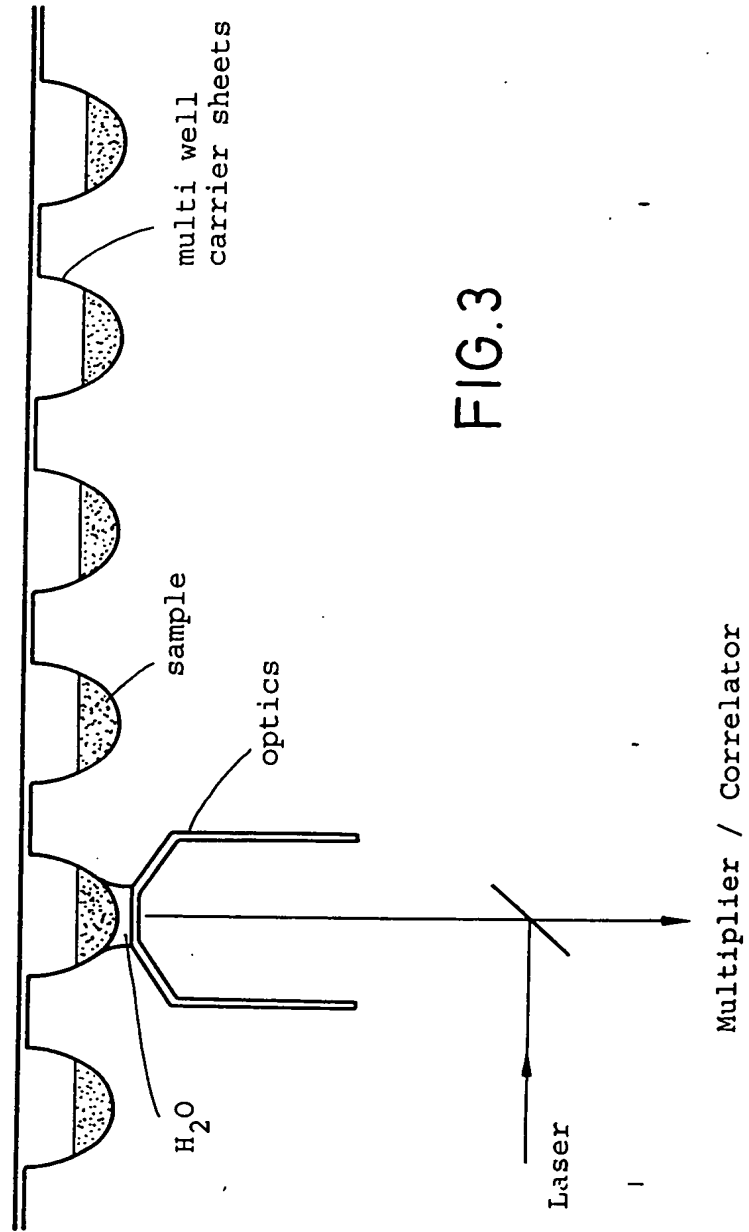


FIG.3

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FCS - Determination of the Fitness of Mutants

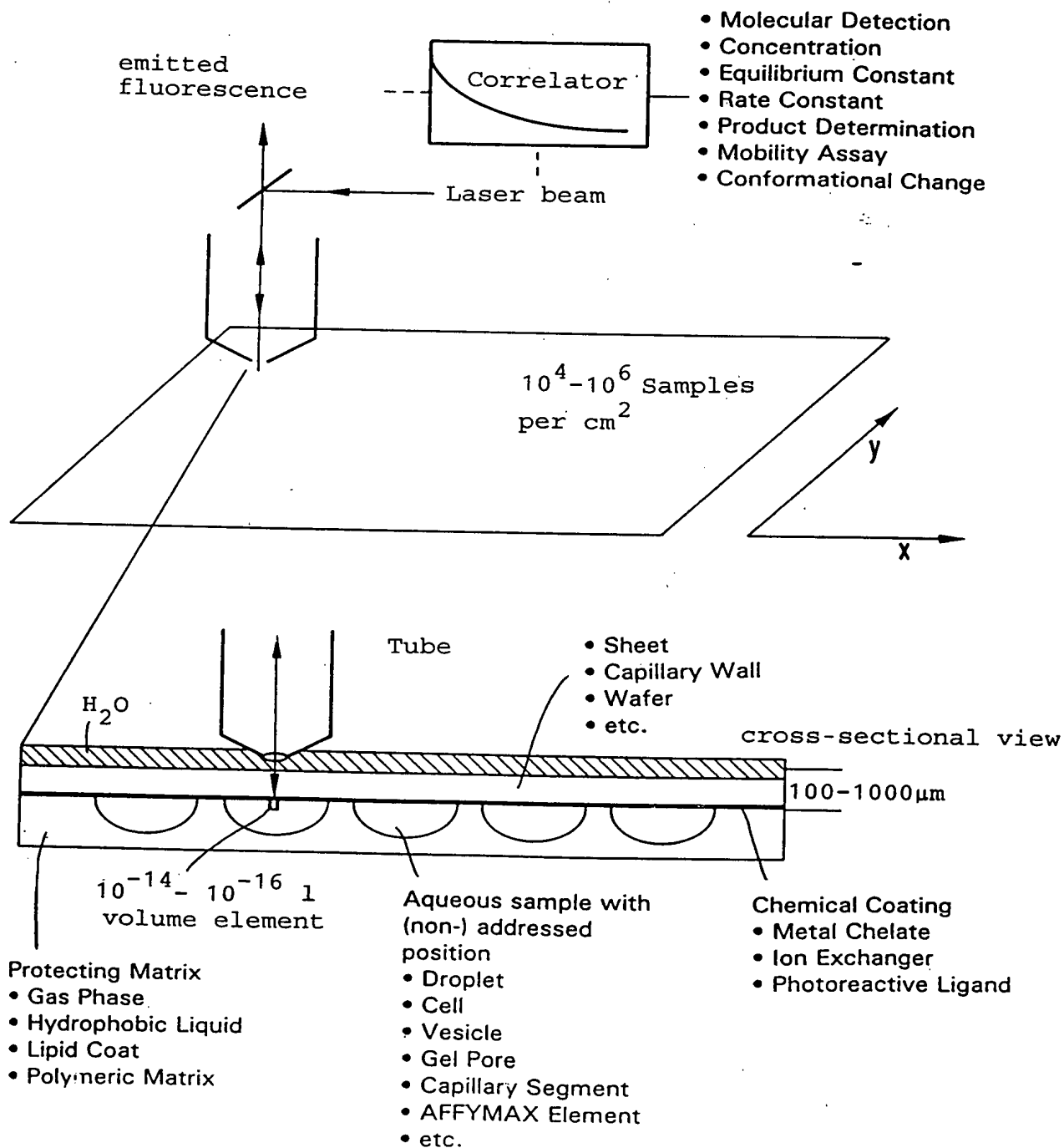


FIG.4

Detection of Molecules on
stationary structures through
relative temporal change of the
positional coordinates of the
measuring volume

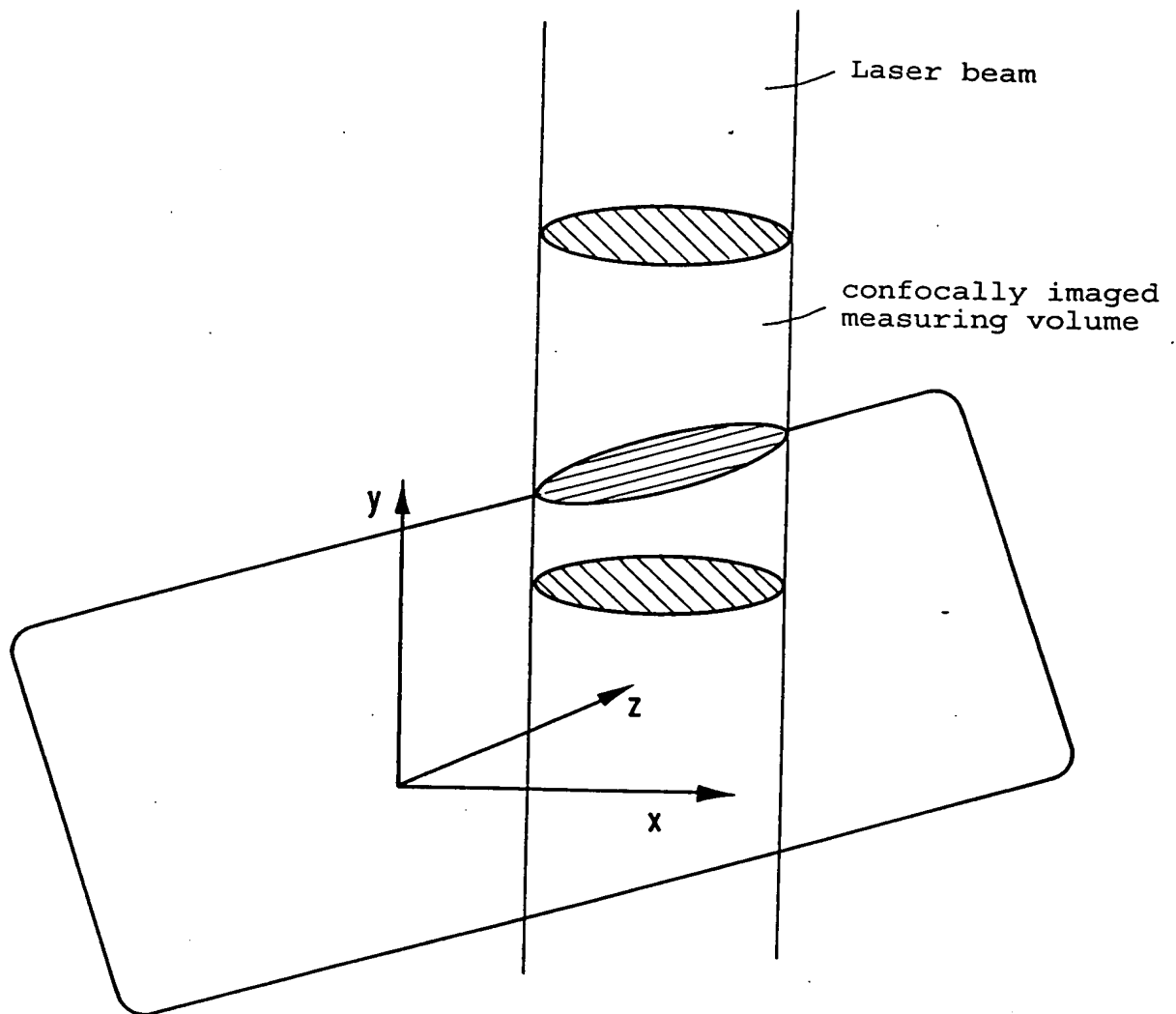


FIG.5

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Detection of Single Molecules
in the Electric Trap

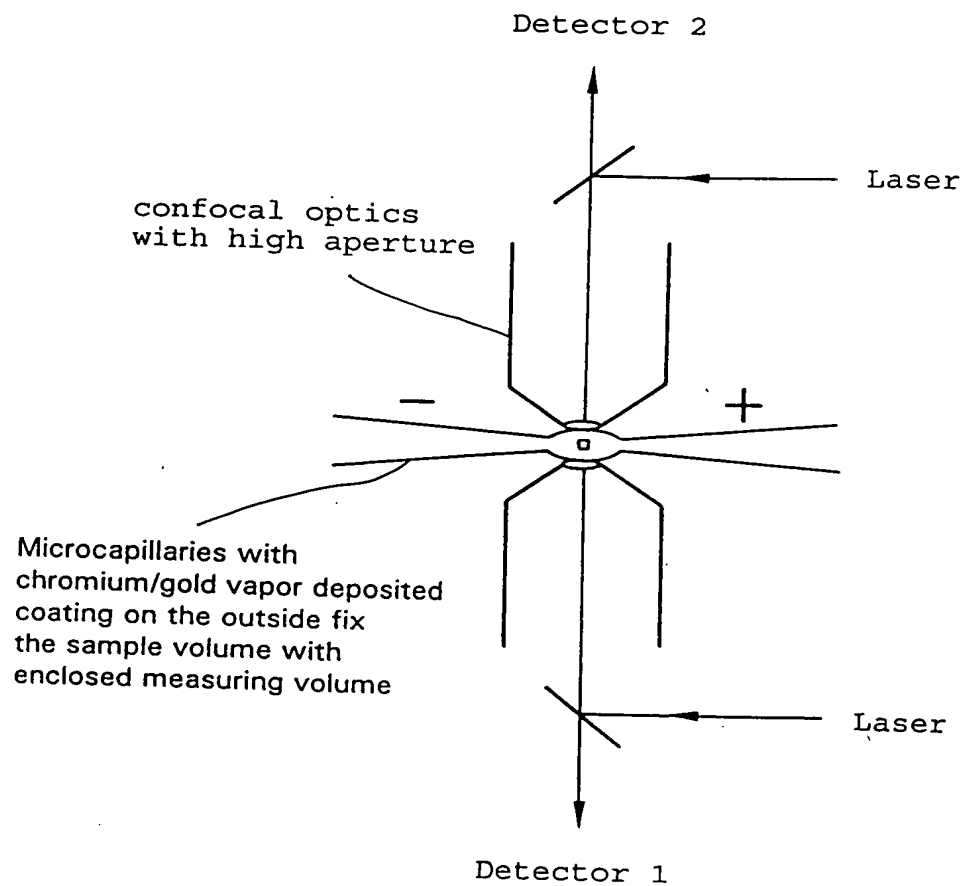


FIG.6

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FCS - Tagging of the
Selected Genotypes

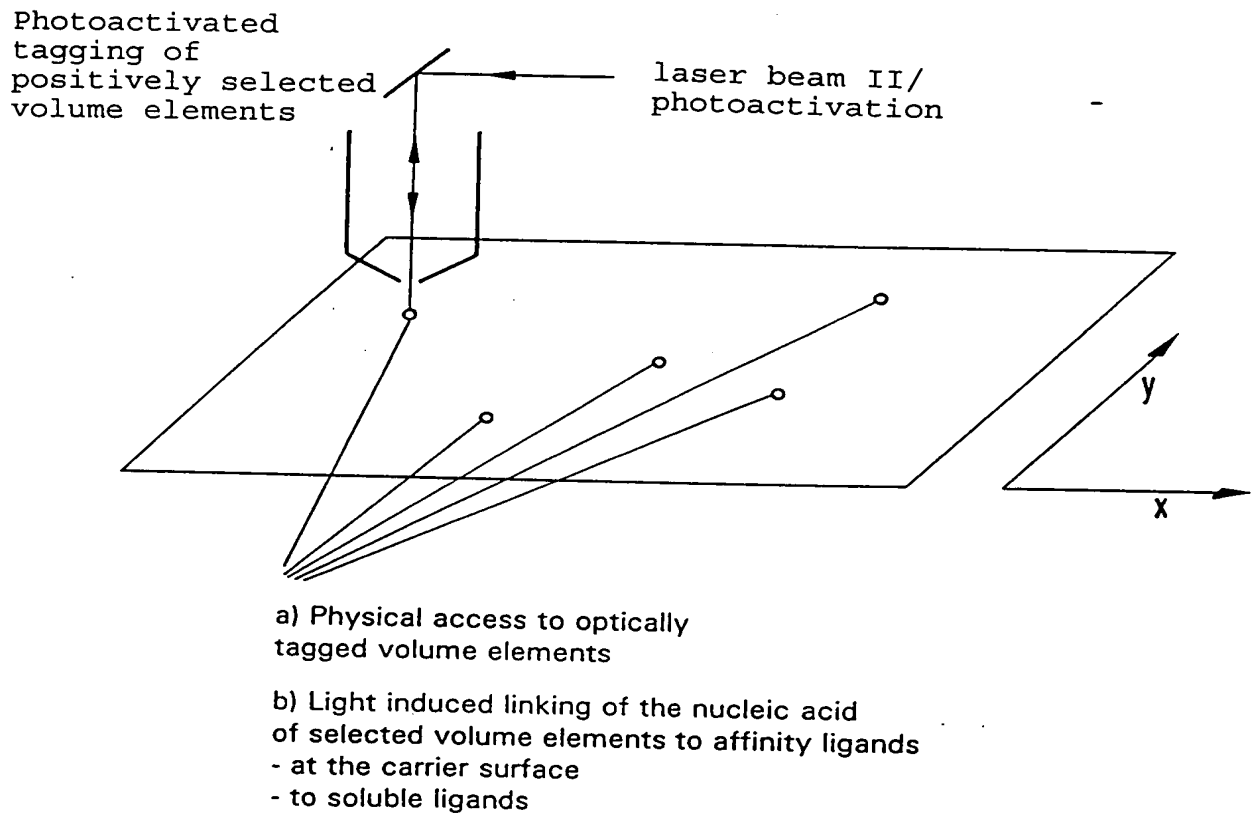
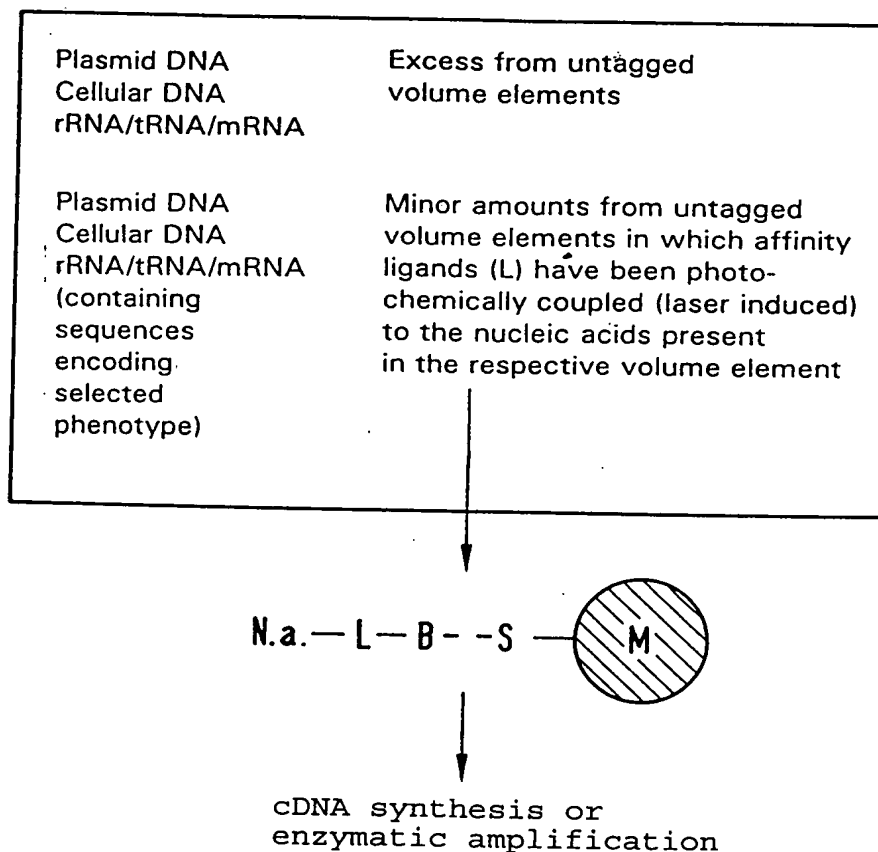


FIG.7

Preparation of the DNA/RNA of
FCS Selected Genotypes

Mixture of all nucleic acids
after phenotype evaluation:



N.a.; Nucleic acid.
 L; Ligand with specific nucleic acid affinity which can be photochemically coupled covalently and preferably reversibly to a nucleic acid (e.g. a psoralen derivative). The ligand is preferably linked to a substituent which allows for subsequent enrichment of the nucleic acids. For instance, this can be a hydrophobic substituent to purify nucleic acids by reversed phase chromatography. For affinity chromatography, substituents such as biotin (B) are the obvious suitable ones so that the nucleic acids can be enriched through (strept)avidin complexing (S) with appropriately modified magnetobeads (M) or surfaces.

FIG.8

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FLUCS Analysis of Complex Mixtures
of Substances after Chromatographic
Separation in Fractions

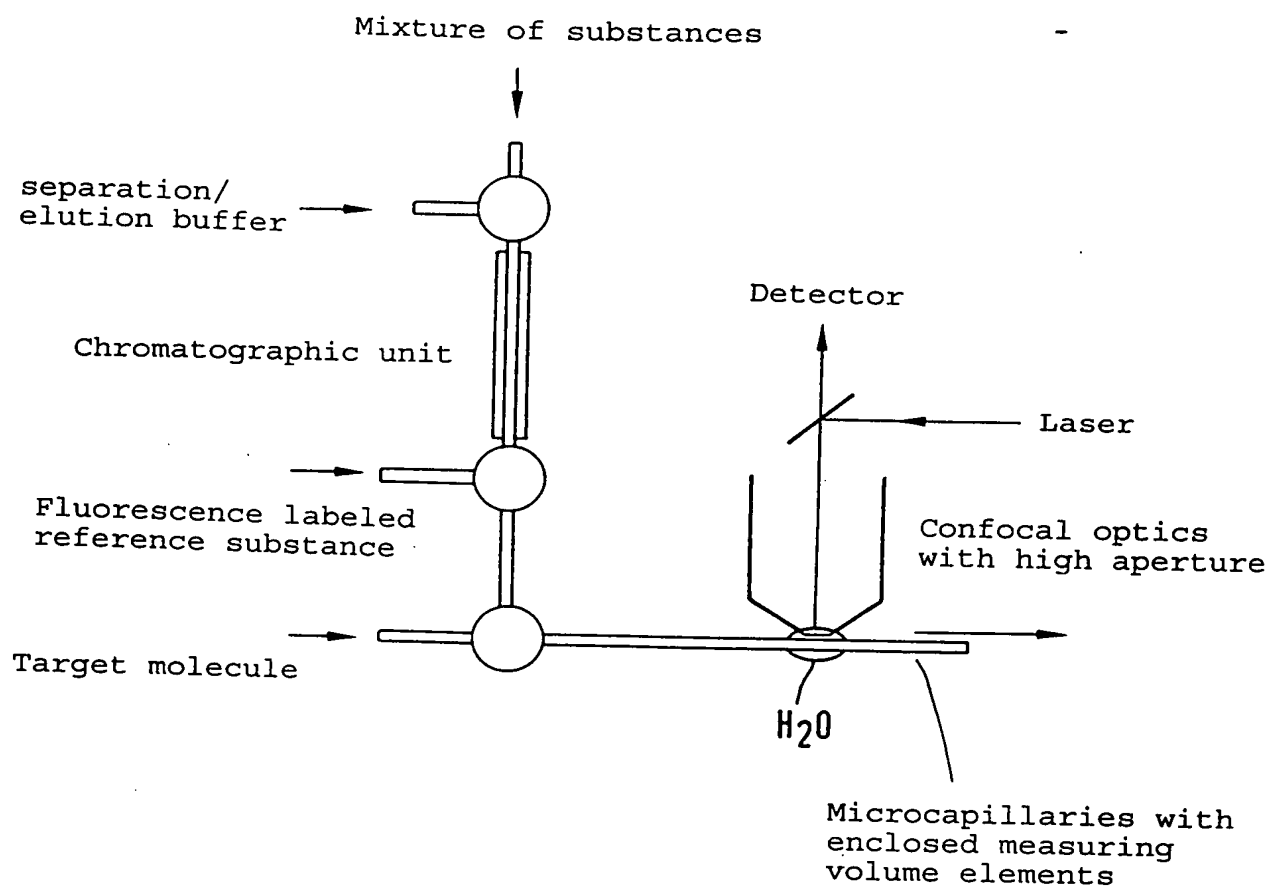


FIG.9

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Laser Correlation Microscope

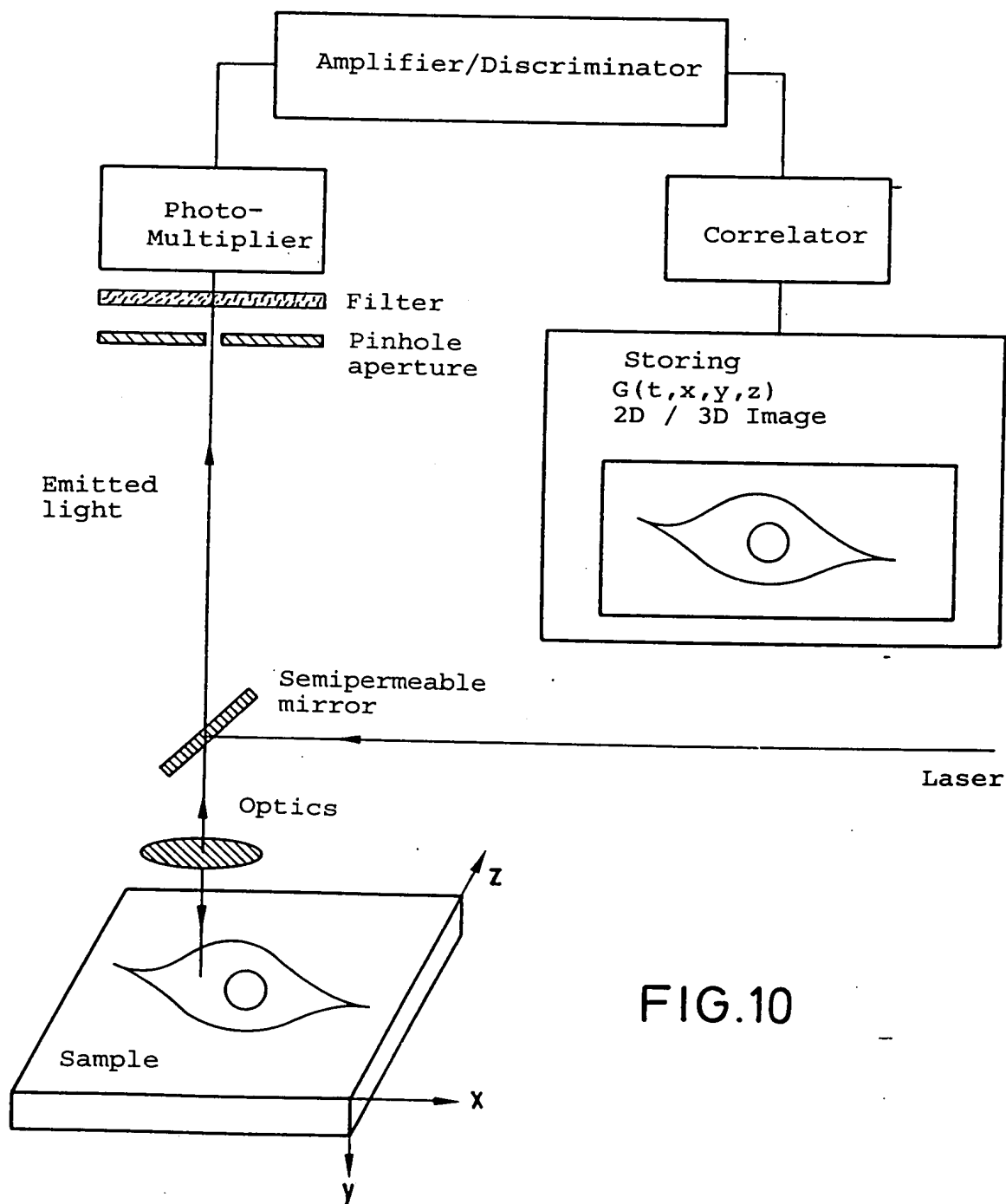


FIG.10

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Selection of Possible Assays

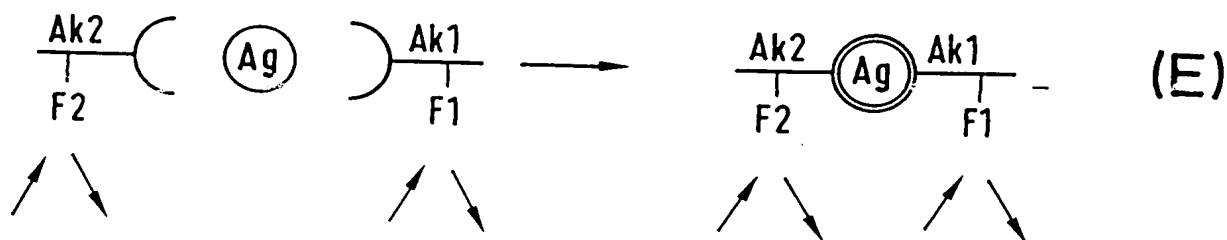
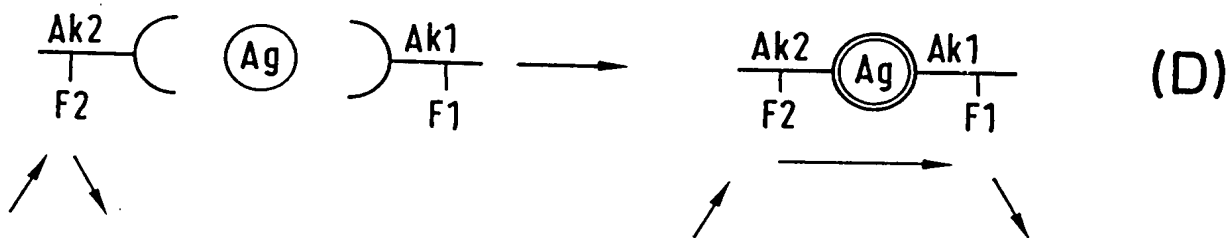
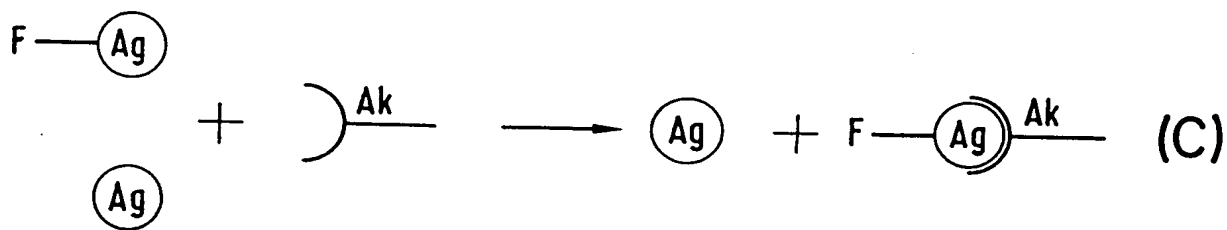
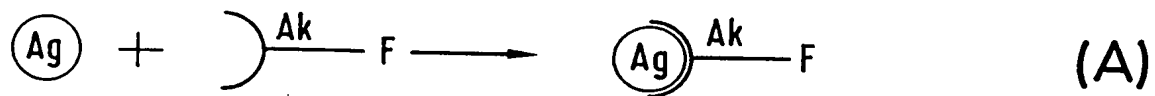


FIG.11

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Electrophoresis Cell

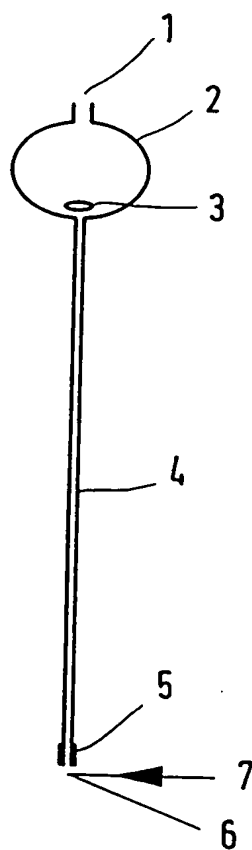


FIG.12

09021410 "021093
860120" 01412060

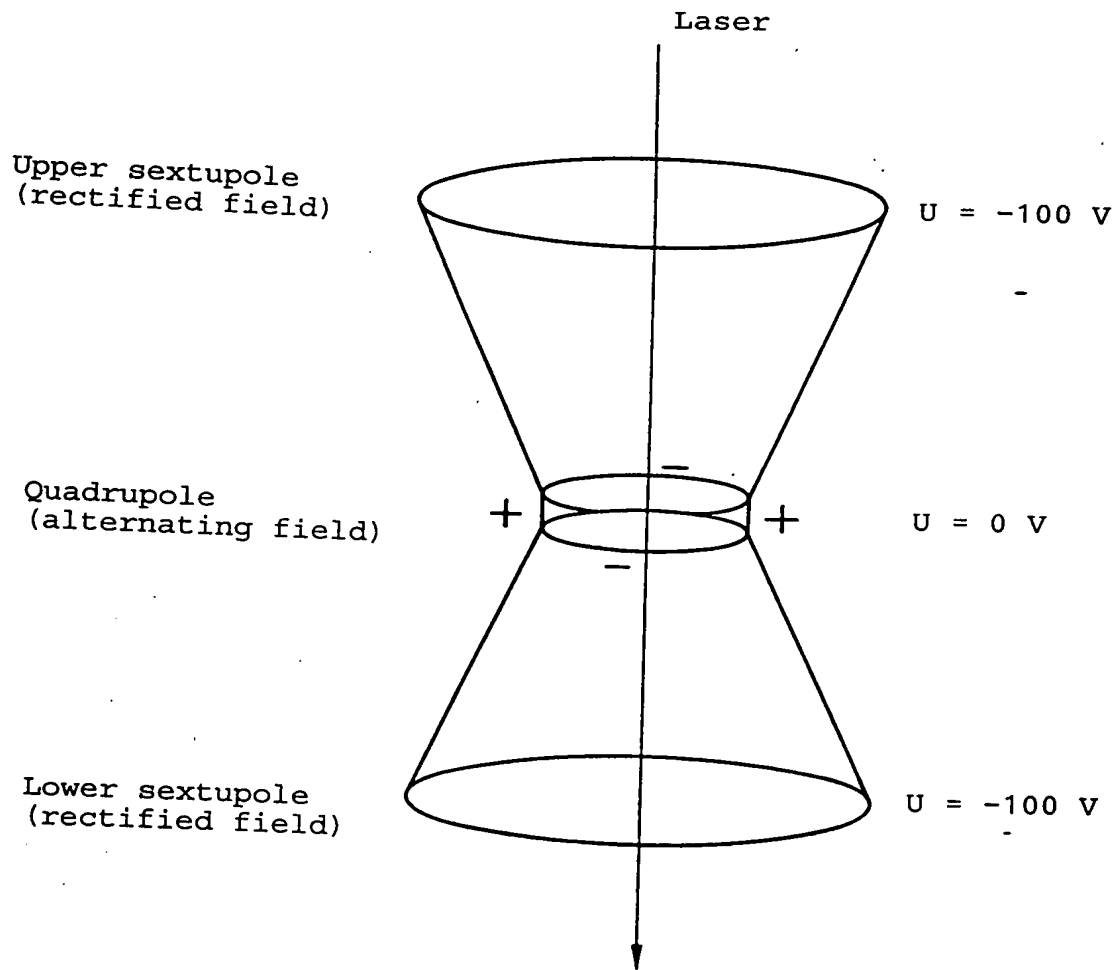


FIG.13

0901410 01093
860120-01412060

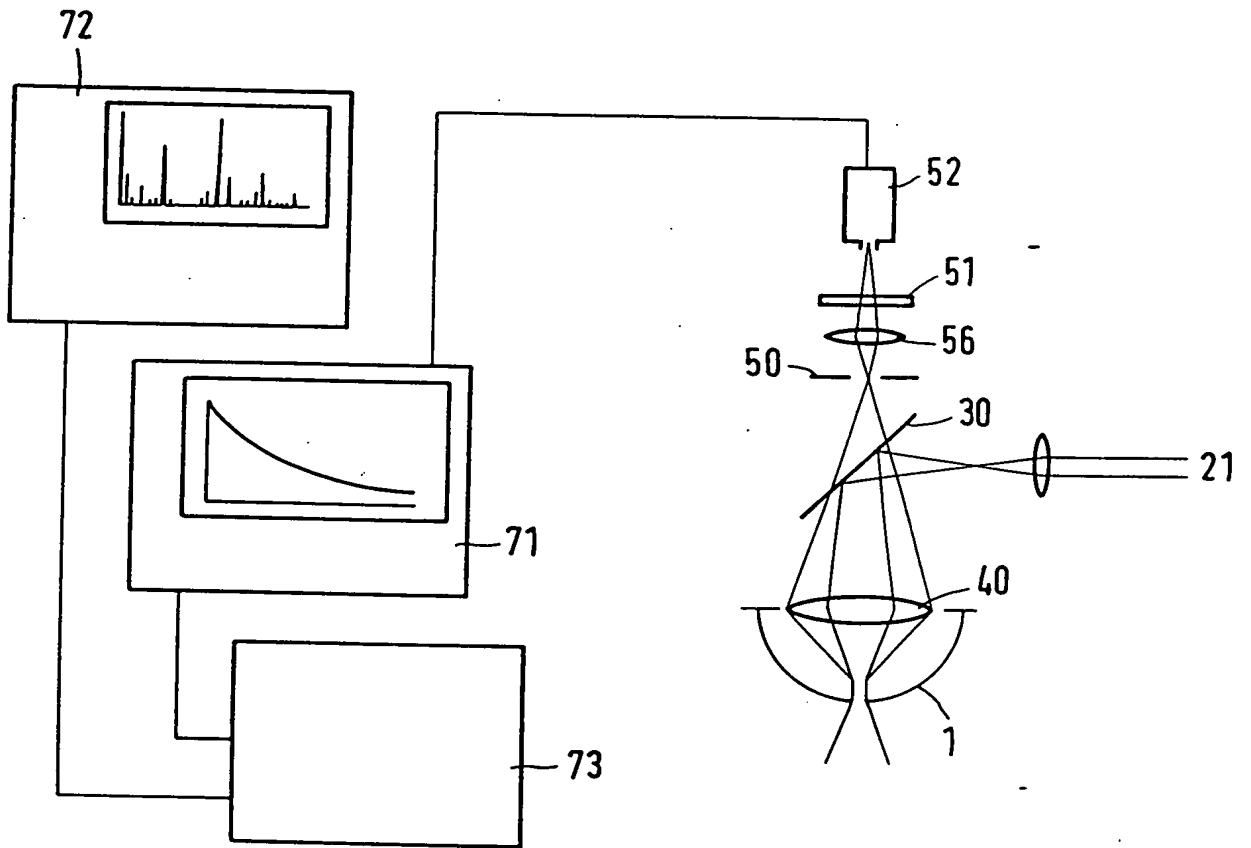


FIG.14

09021410 021098
860120 01412060

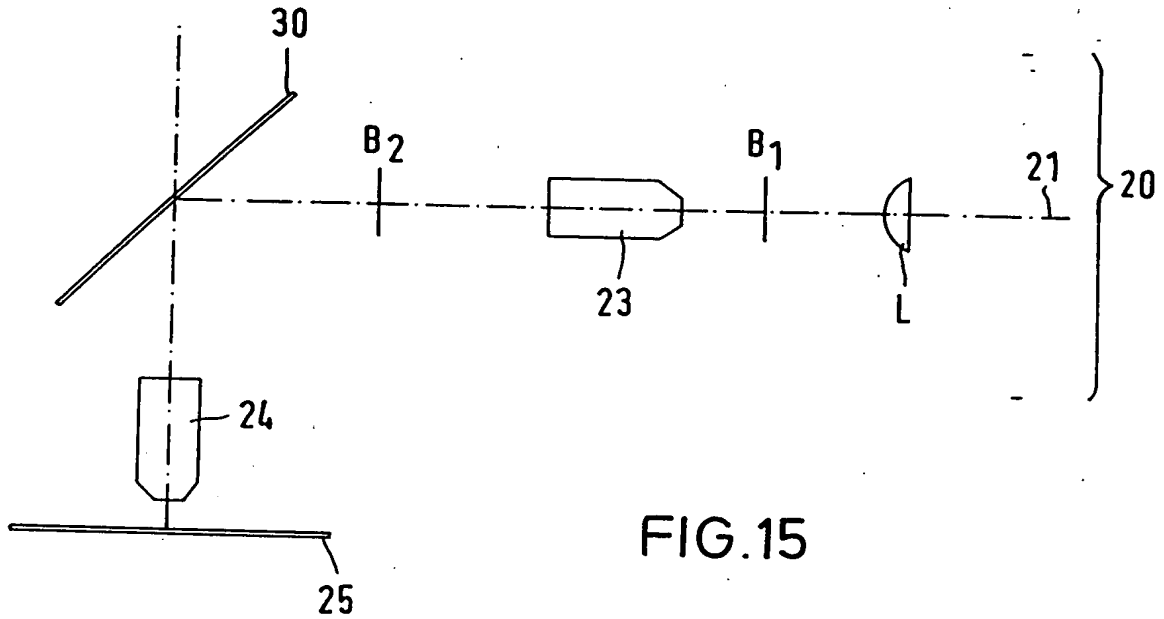


FIG.15

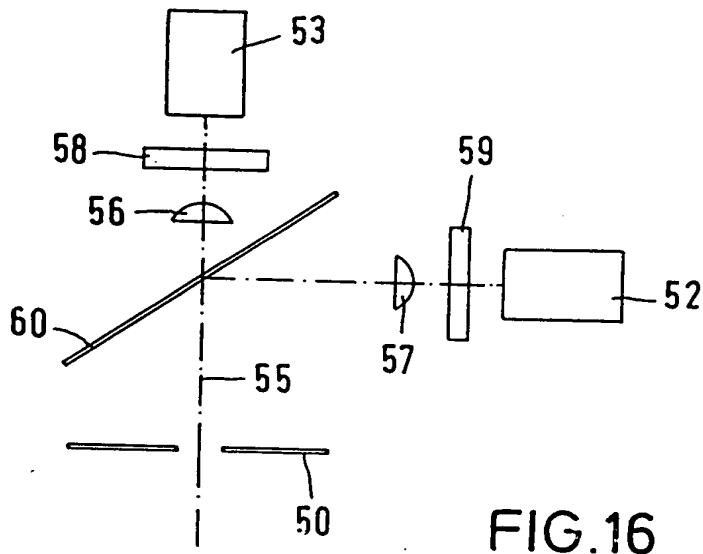


FIG.16

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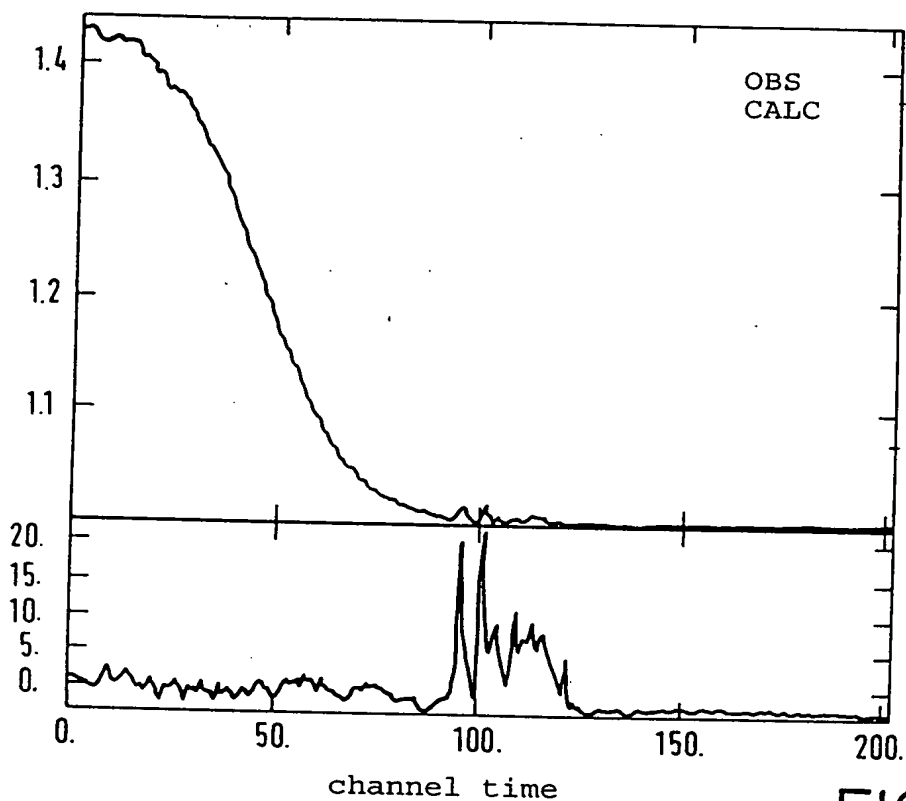


FIG.17a

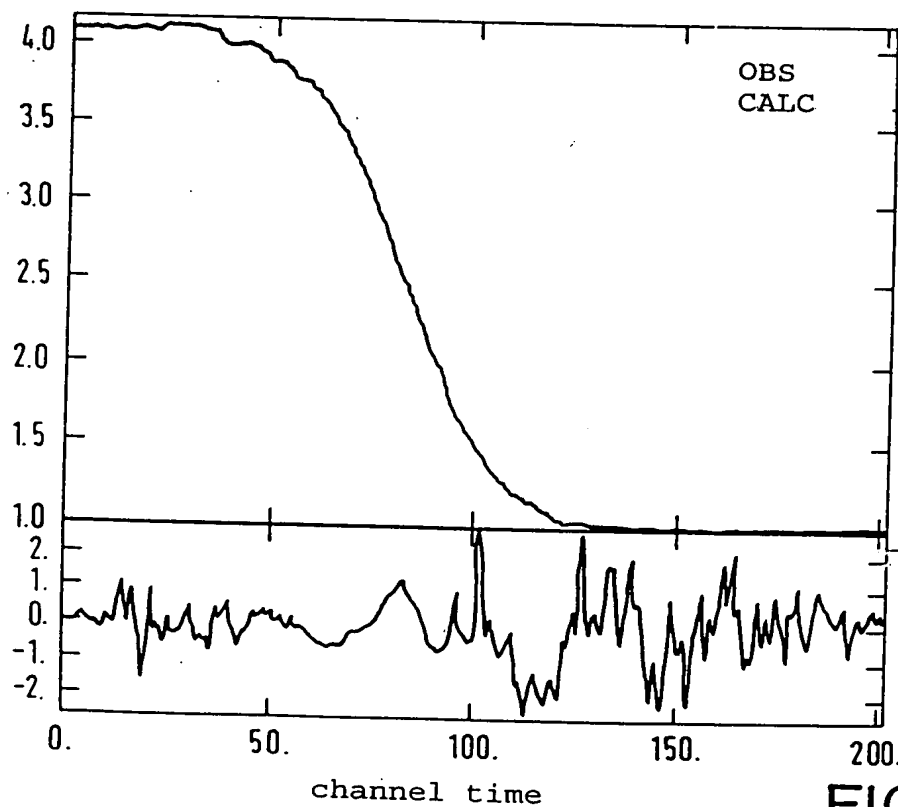


FIG.17b

060120 DT412060

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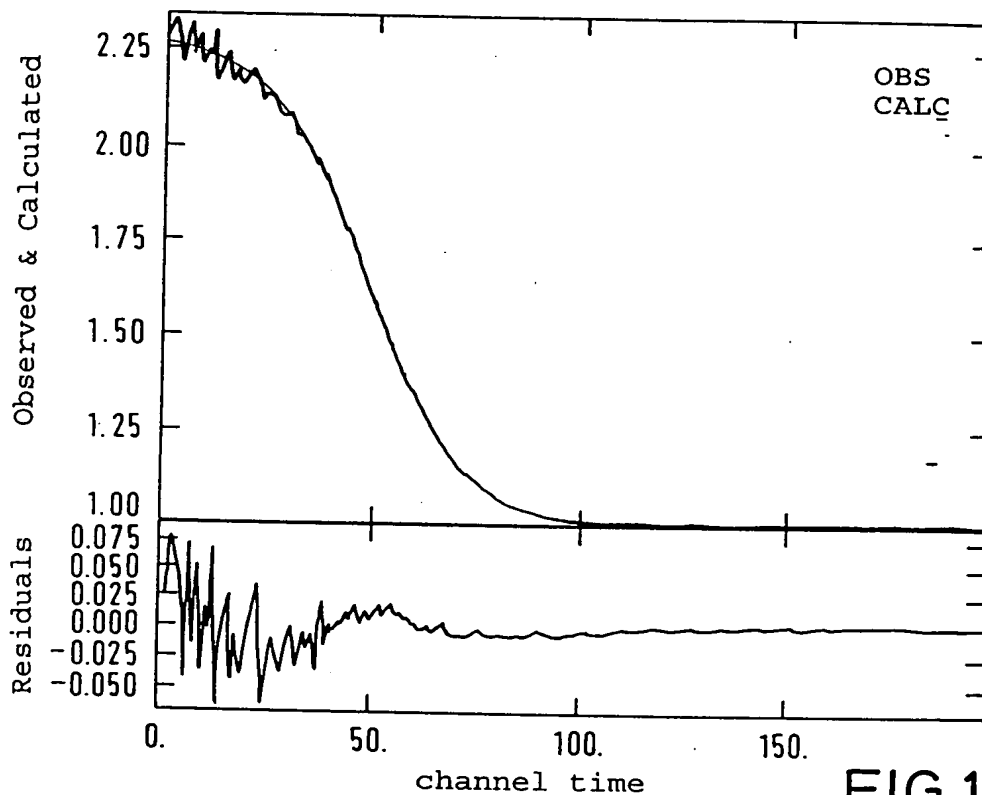


FIG.18a

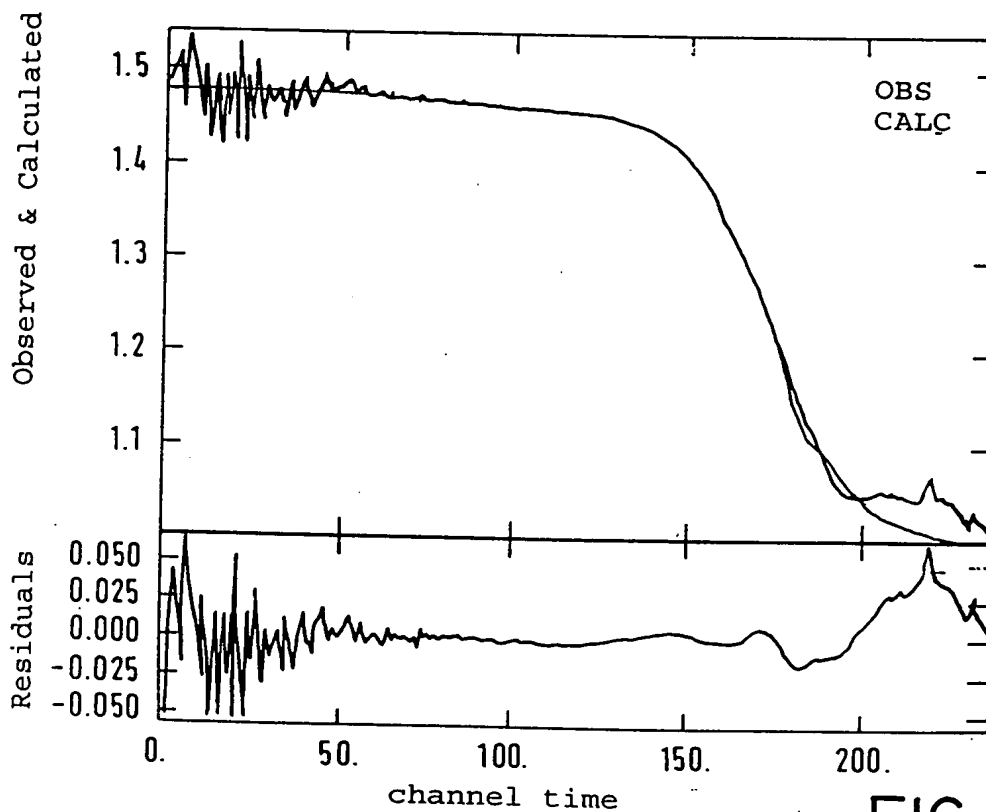


FIG.18b

860T20" 014T2060

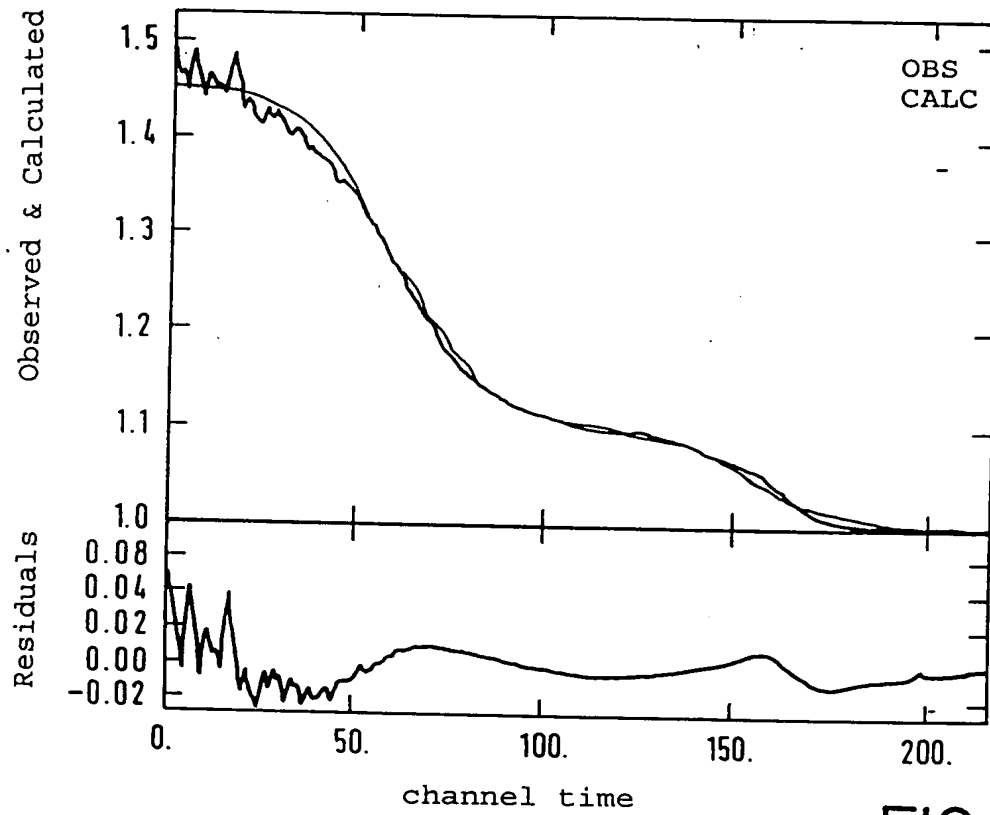


FIG.18c

Determination by FCS of the Dissociation Behavior
of Complexes in Experiments Performed in Parallel

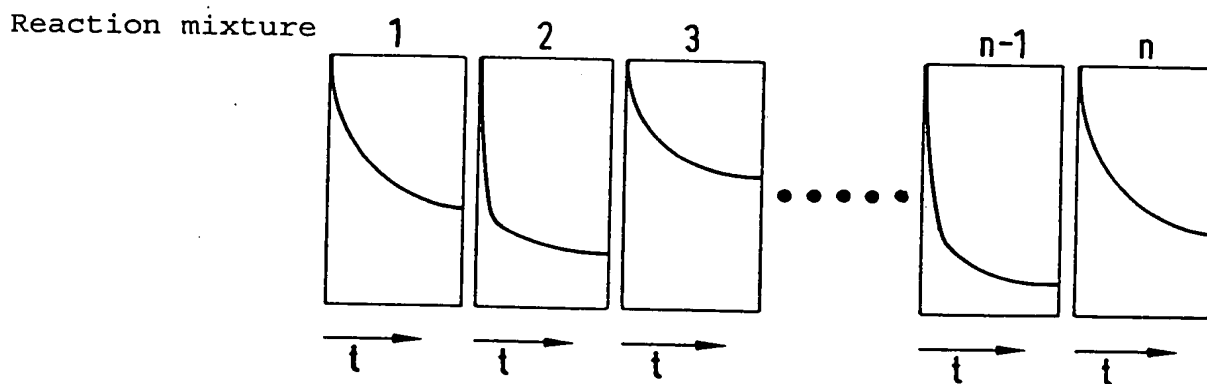
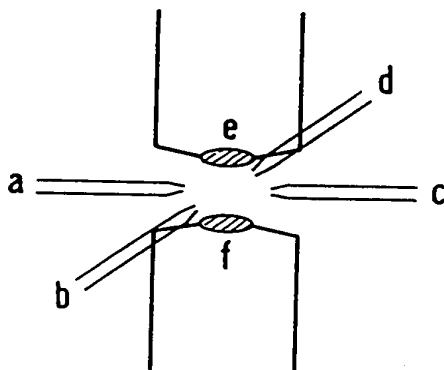


FIG.19

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860720-0412060

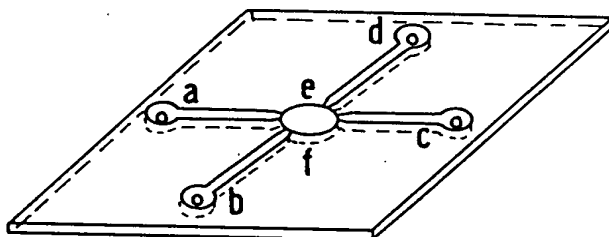
Different Embodiments of the Electric Trap
According to the Invention

FIG.20a



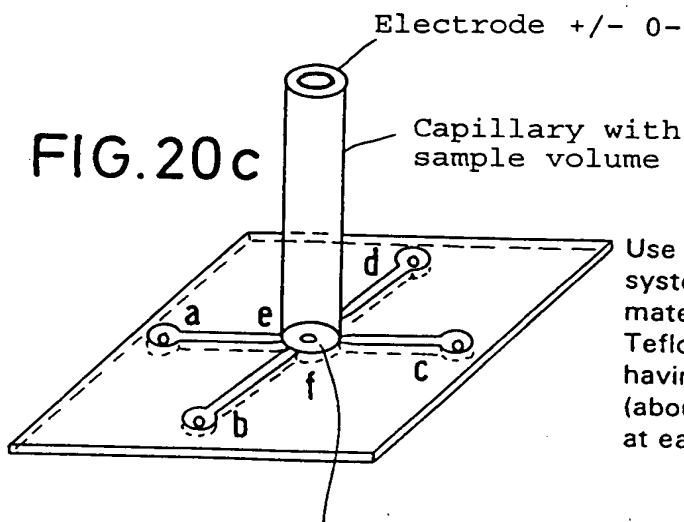
a, b, c, d as quadrupole electrodes (metal coated Neher tips or metal vapor coated electrodes on microstructures on flat sample carriers (silicone, glass, and other basis materials)).
e, f as sextupole electrodes (e.g. as metal vapor coated emergence lens of one or two objectives).
Adjustment is performed by x,y,z adjustment.

FIG.20b



Use of flat carriers with etched electrode channels (or forms made by LIGA technique) through which charged molecules can be controlled with respect to their migration in the electric field, can be led in or out. The bottom plates at e and f can be objectives coated as sextupole electrodes or metal vapor coated coverings.

FIG.20c

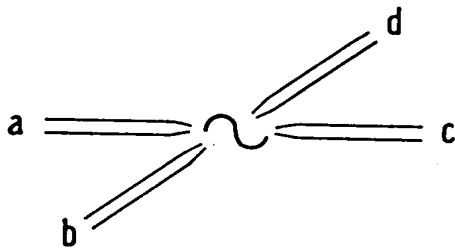


Use of (b) in combination with a sample dispenser system consisting of a capillary made of mineral materials (e.g. glass, silicon, etc.) or plastics (e.g. Teflon) for the reception of large sample volumes having an electrode at the end of the capillary (about +/- 0-100 Volt) and a collecting electrode at earth potential (0 Volt).

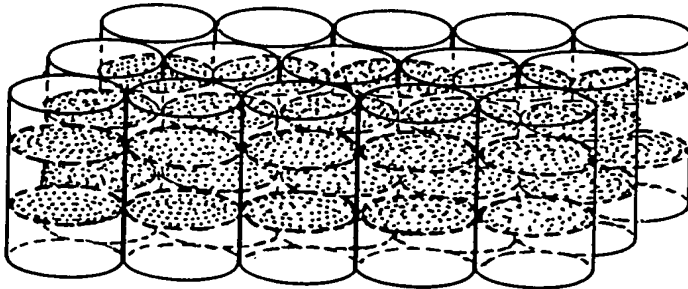
Collecting electrode with earthing, (potential 0 V) and Pinhole for ions to pass into the quadrupolar field

Molecular Detection

FIG.21a



If target molecules are present within the quadrupole or sextupole field the molecules can be set into forced motion by a random alternating field over the electrodes a, b, c, d. They thus become countable according to the invention.



The position of a molecule within the trap is recognized by a multielement detector. By active feedback the quadrupole/sextupole field is adjusted such that the molecule gets fixed in its position within a defined area/volume element.

FIG.21b

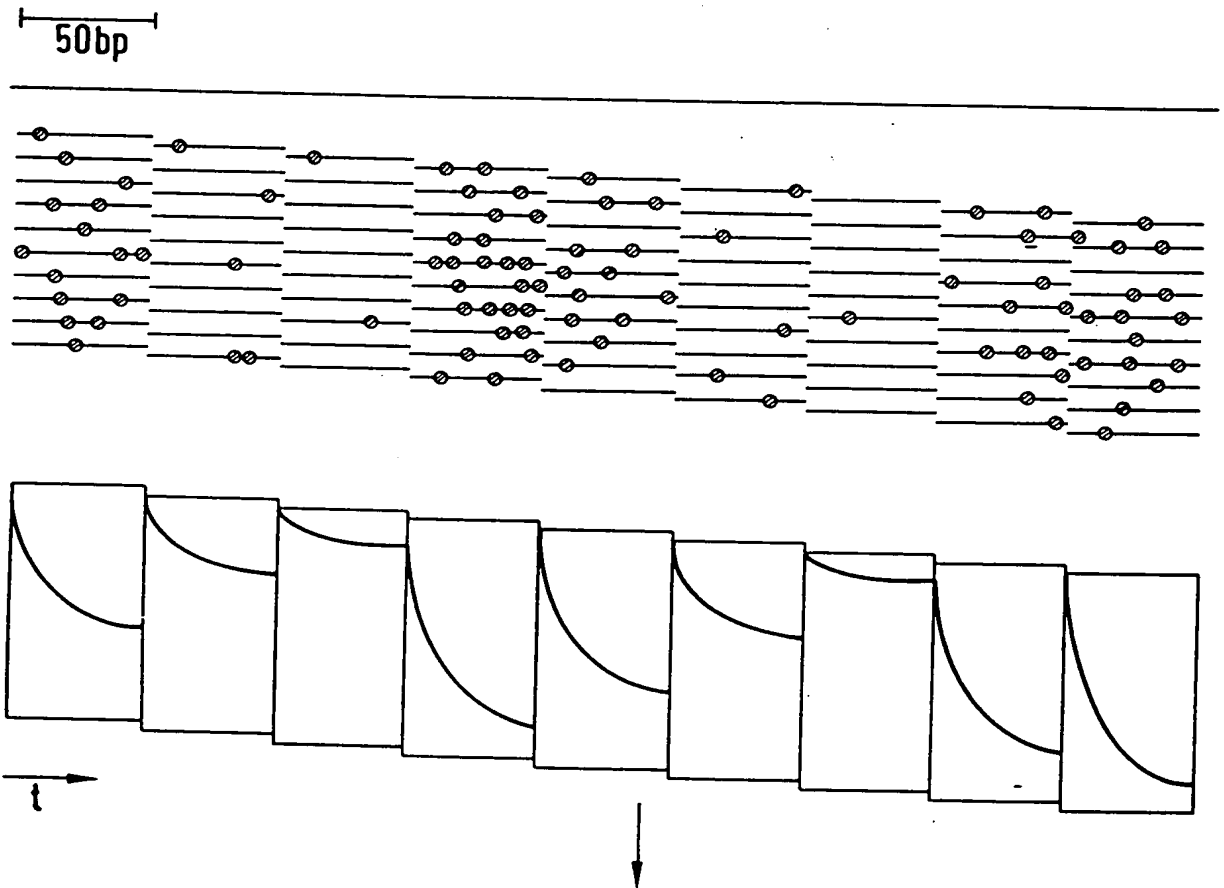


FIG.22

09021410-021098

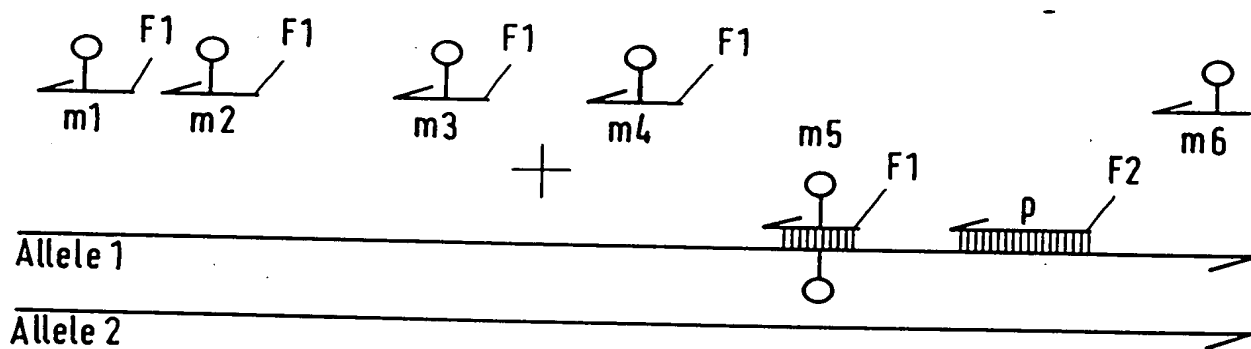


FIG.23

09001410-0101098

Small Excitation Volumes (a) and
Small Measuring Volumes (b) and Small
Volumes with Parallel Measurements (c)

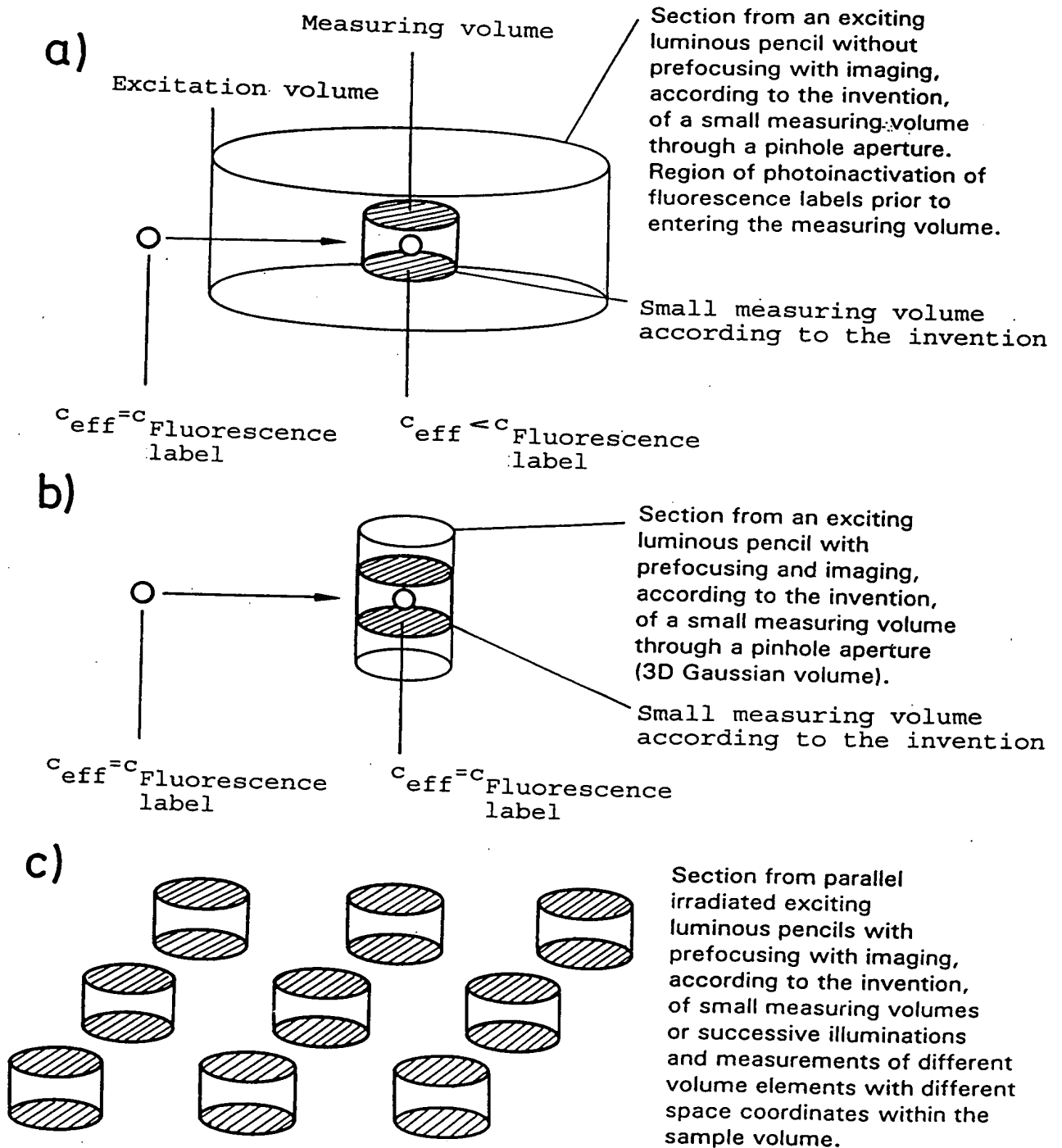
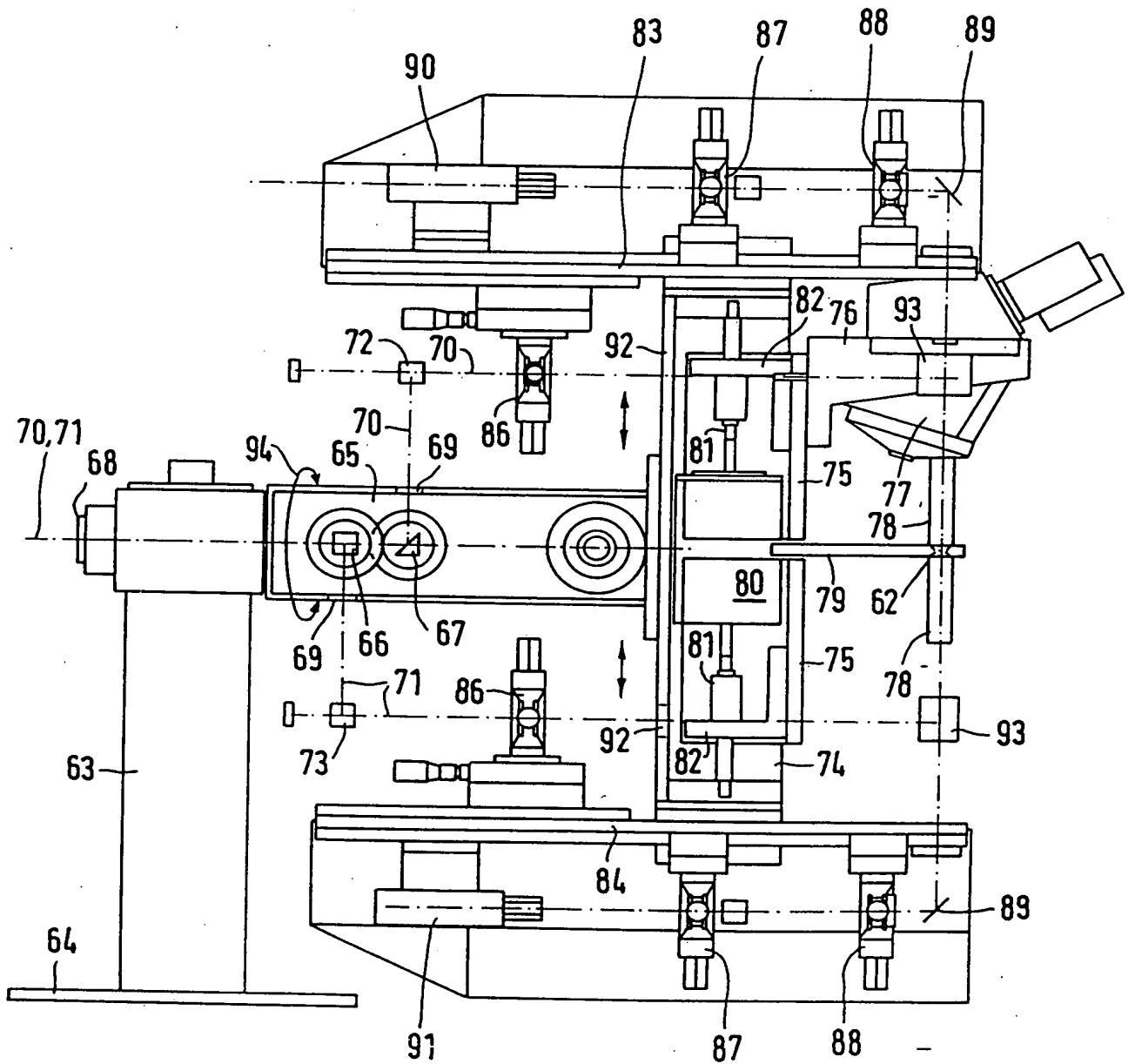


FIG.24

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FIG.25



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090021410 074T2060

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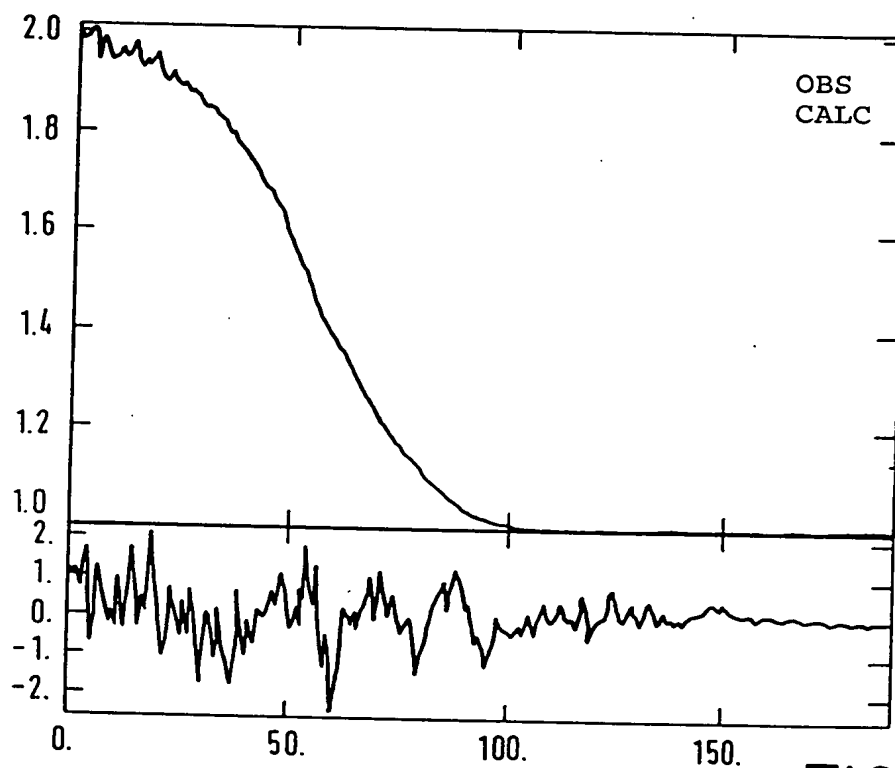


FIG.26a

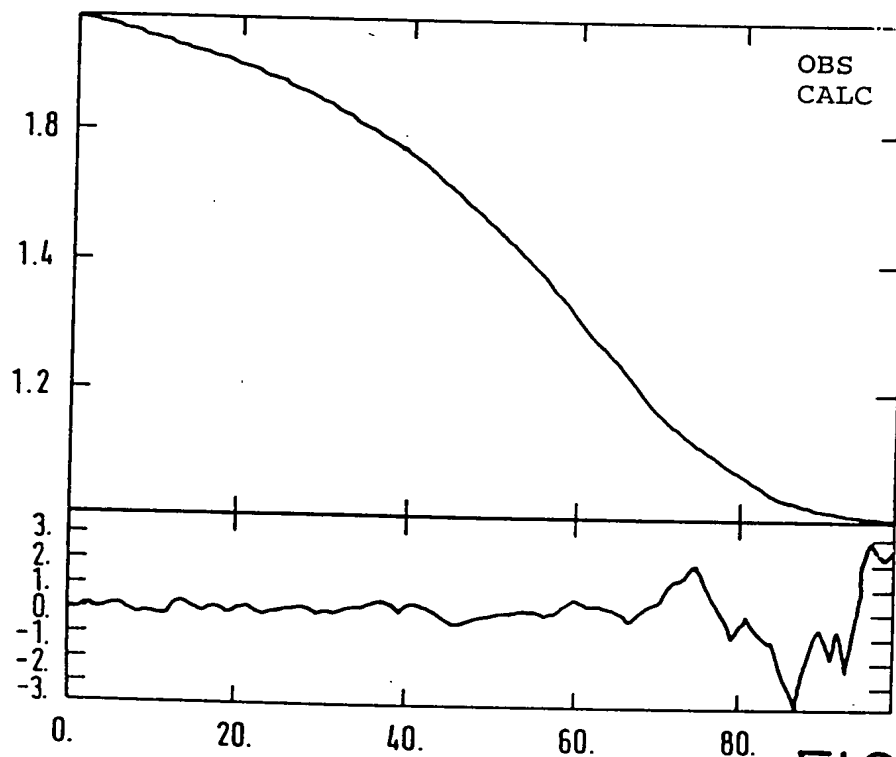


FIG.26b

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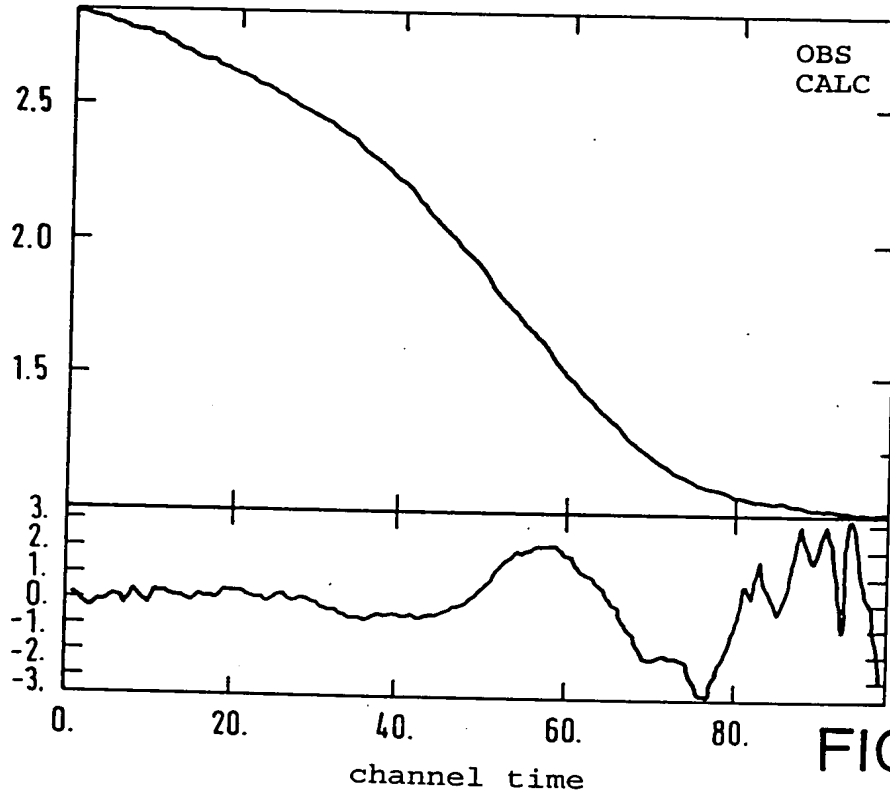


FIG.26c

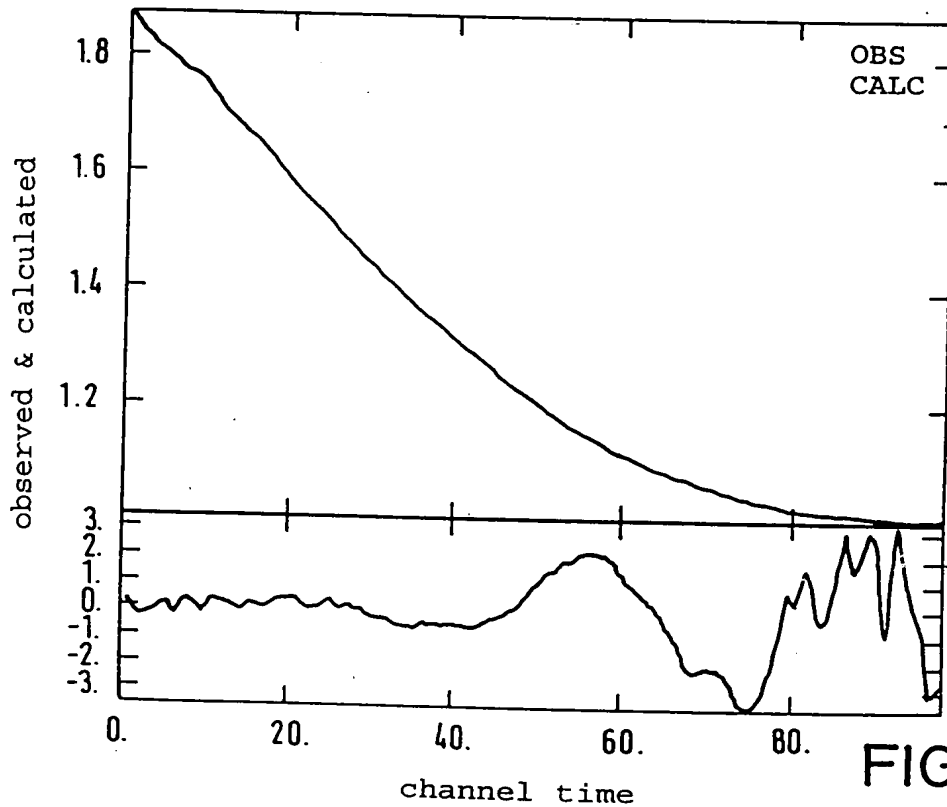


FIG.27

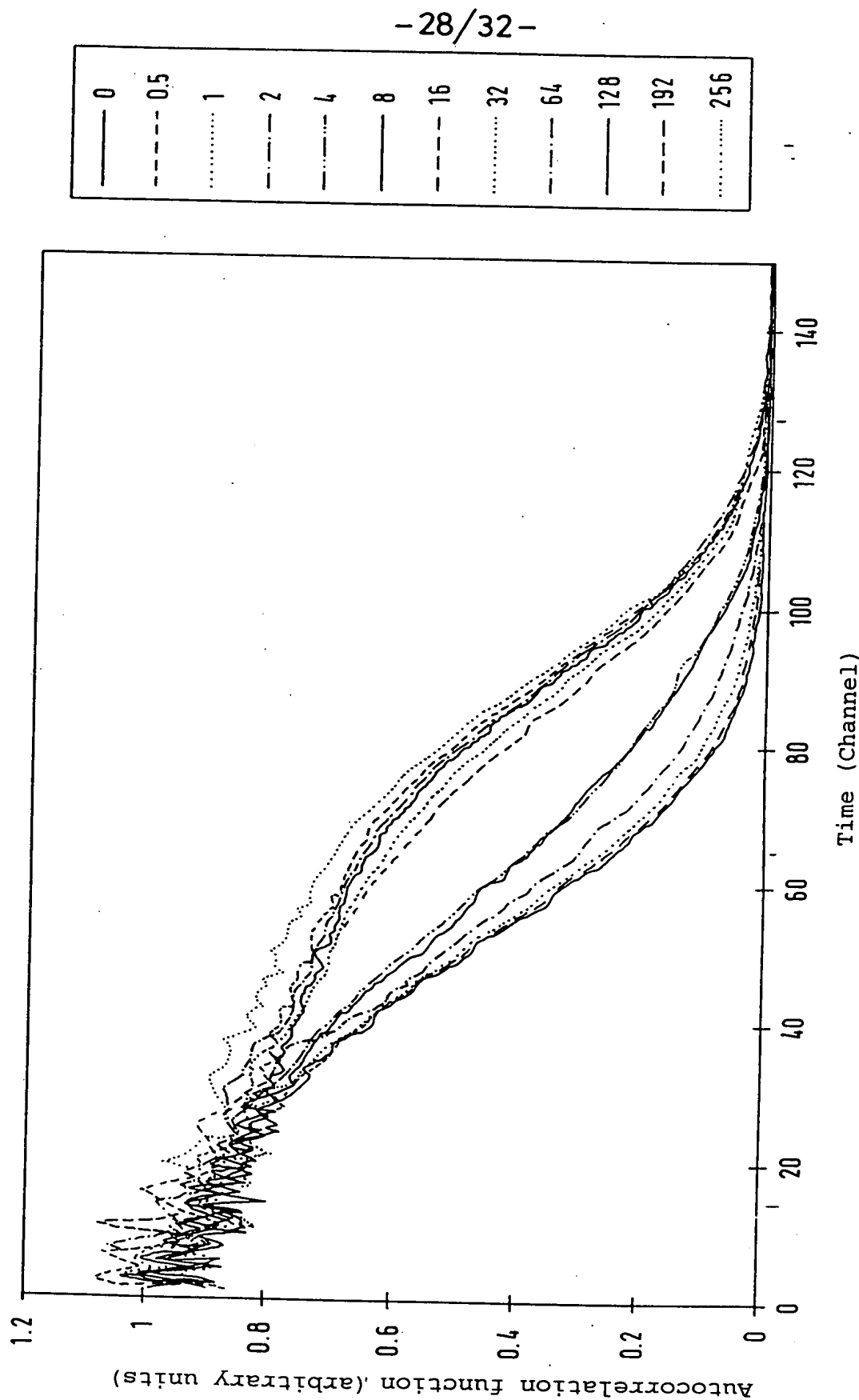


FIG.28a

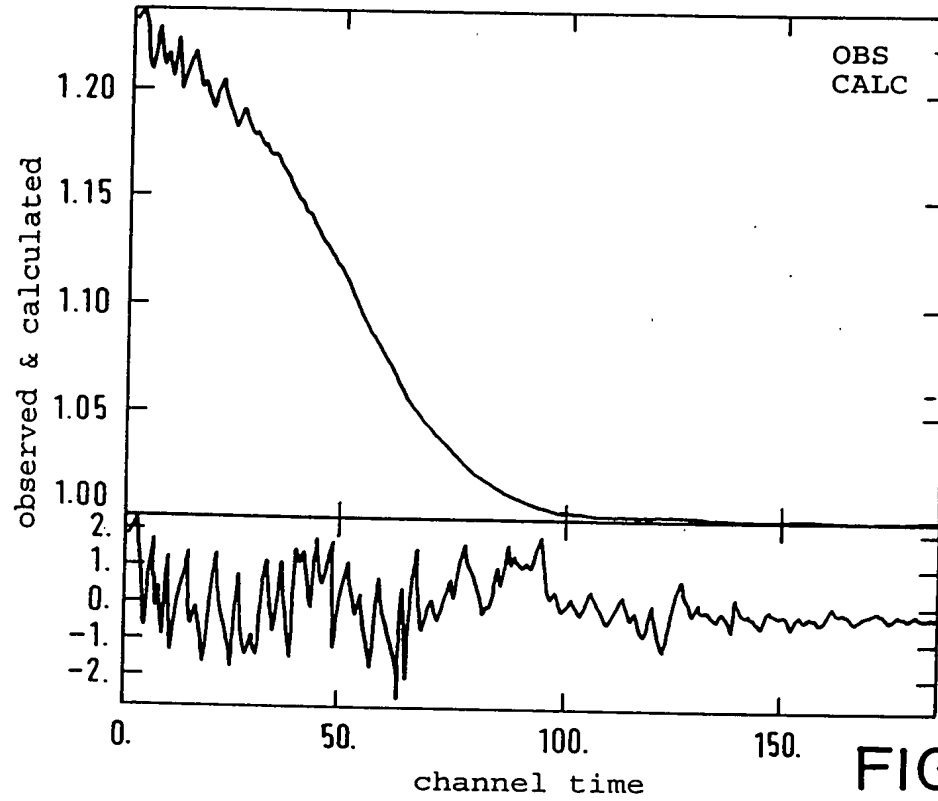


FIG.28b

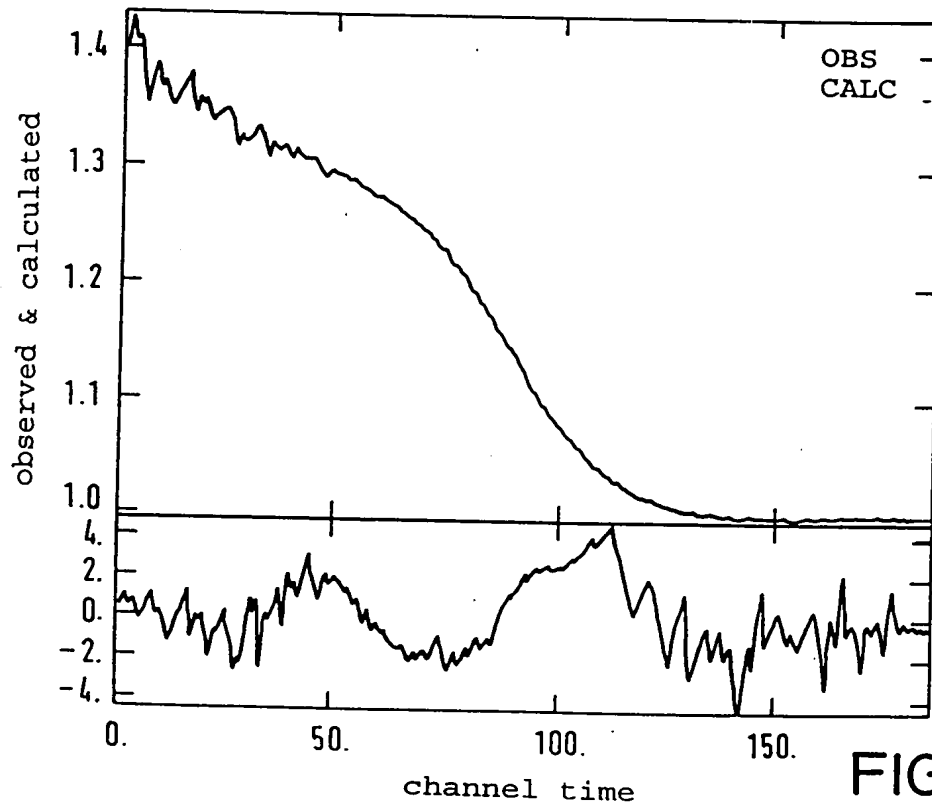


FIG.28c

09021410 021058
860720 07472060

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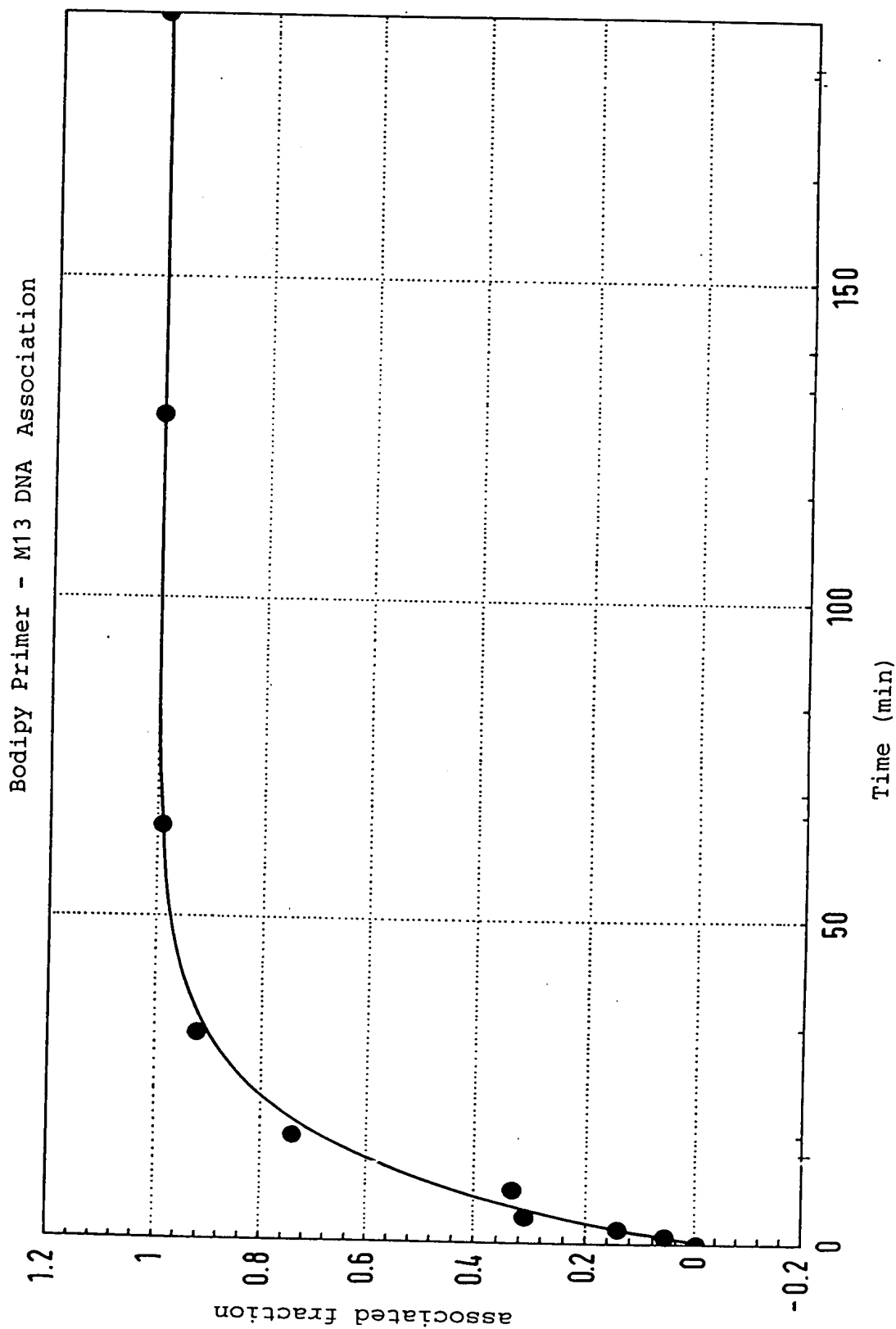
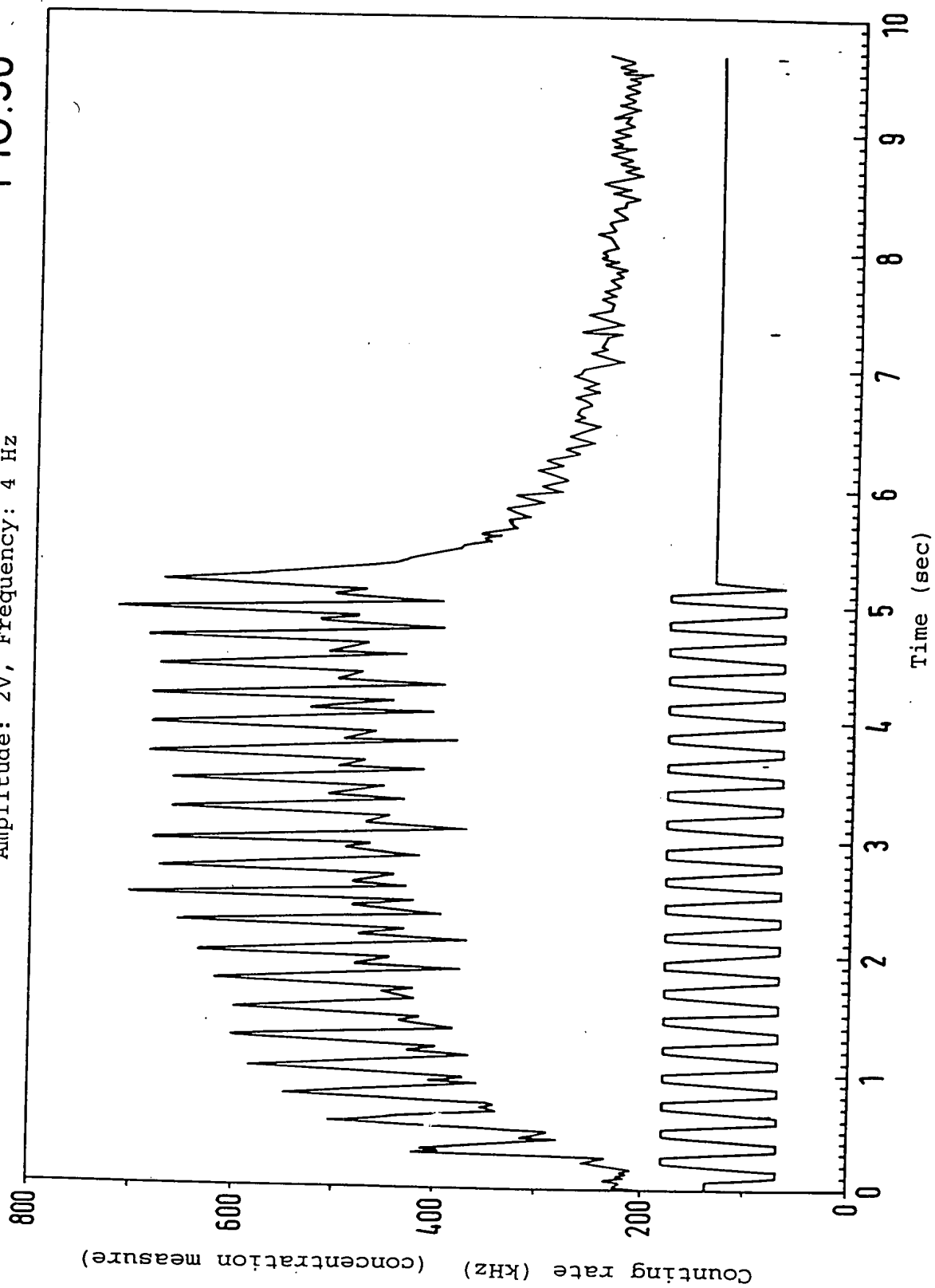


FIG.29

RDV10.DAT (Rho-dUTP with steel tips)
Amplitude: 2V, Frequency: 4 Hz

FIG.30



Multichannel Detection of Rhodamine 6G (Single Molecules)

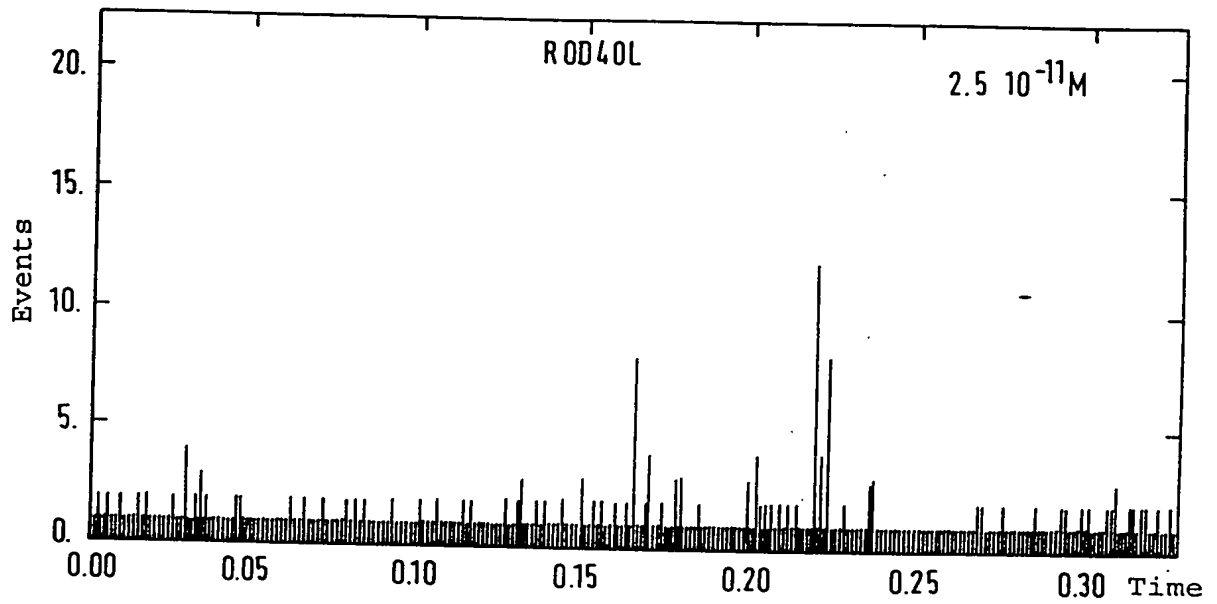


FIG.31a

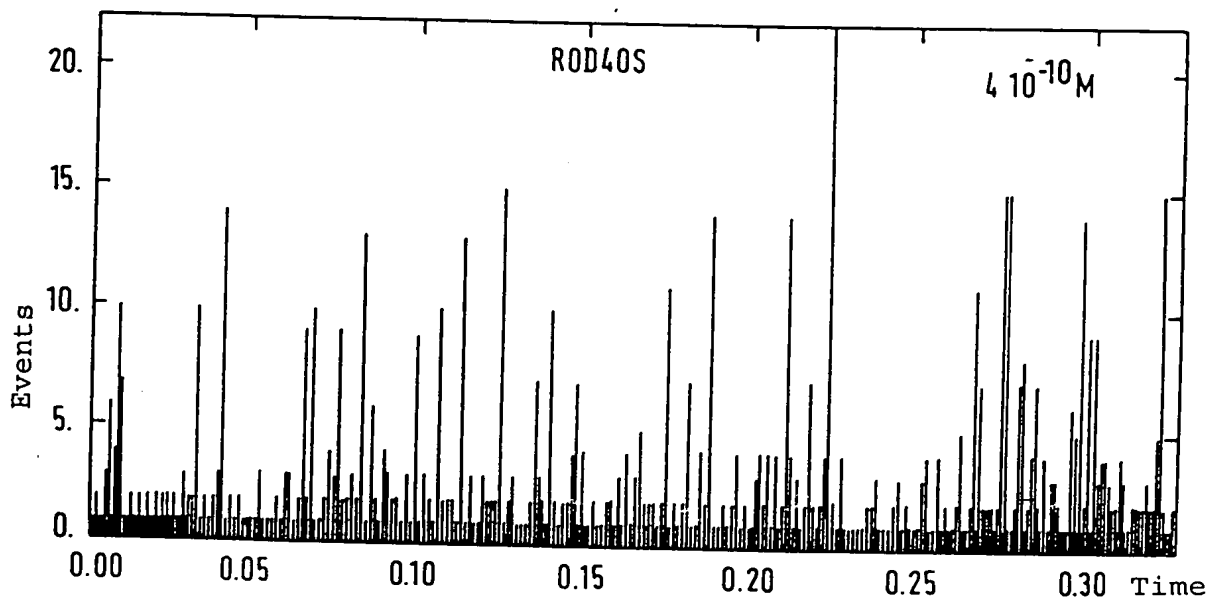


FIG.31b

09021410.021098
860720.07472060